

## Investment Patterns Indicate Modest Expansion by Value-Added Industries

*Value-added manufacturing industries require significant capital investment each year to maintain production capacity. In the mid-1990's, value-added manufacturers expanded their stock of plant and equipment, but food and tobacco manufacturers are the only value-added industries that expanded their productive capacity faster than nonvalue-added manufacturing industries.*

The stock of capital per production worker in major value-added industries averaged \$103,000 in 1994. This is slightly above the average for other industries, but masks the diversity in capital intensity among value-added industries. Food processing, tobacco, and paper products are among the most capital-intensive manufacturing industries. The paper industry, in particular, is highly capital intensive, averaging \$199,000 per worker. Other value-added industries, including lumber and wood products, leather, and furniture manufacturers, use considerably less capital per worker.

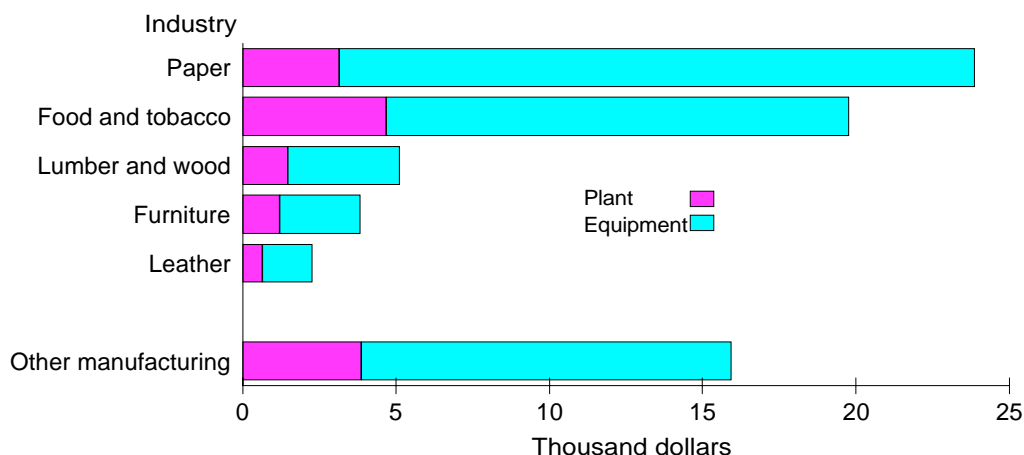
New investment is needed each year to replace depreciated capital and to expand capacity by building new facilities, adding to existing facilities, or upgrading plant and equipment (see box "Capital Investment Is an Indicator of Growth"). Levels of new investment per worker in 1994 (the most recent year for which detailed data are available) again show the diversity among value-added industries in capital intensity. The paper products and food and tobacco industries (food and tobacco are combined as a single industry in these statistics) invested roughly \$20,000 or more per production worker (fig. 1). Investment by lumber and wood products (\$5,118 per worker) and leather products manufacturers (\$2,286 per worker) was more modest.

Equipment accounts for much of the investment in these industries, and the type of equipment employed by value-added industries reflects the diversity of production processes among these industries. For example, 28.5 percent of equipment investment in value-added industries is for specialized industrial machinery (machinery designed explicitly for the industry that uses it, table 1). For other manufacturing, only 6 percent of new investment is in equipment specialized for their industry, and these industries have the largest share of their new equipment investment devoted to office computing equipment. About 22 percent of new investment in other manufacturing is for office computing equipment, whereas value-added industries have devoted half of this amount on such investments. This is a reflection of the workforce in value-added manufacturing, which includes a large share of less skilled production line workers, and relatively few professional and technical workers (see "Value-Added Workers Earn Less, Have Less Education Than Other Rural Manufacturing Workers"). Professional and technical workers tend to work with computers and office equipment, while production line workers tend to work with industrial machinery and equipment.

Figure 1

### Annual capital expenditures per production worker by industry, 1994

*Paper, food, and tobacco manufacturers have the greatest capital requirements per worker*



Source: ERS analysis of Bureau of Economic Analysis data.

Special industry equipment averages more than one quarter of the total capital investment in all value-added industry, with food and tobacco devoting the highest share (33.9 percent), lumber and wood the least (16.0 percent). For furniture and leather manufacturing, computers were the leading type of equipment investment, whereas lumber and wood manufacturers made no appreciable new investments in computers. Lumber and wood product industries have their greatest investments in trucks, buses, and trailers.

Over 30 percent of new capital expenditures by furniture manufacturers were devoted to new or improved plant facilities. A similar share of new investment was devoted to plant facilities by lumber and wood products (14.9 percent "industrial buildings" and 13.8 percent "other structures"). Paper and allied product manufacturers, who invest more heavily in machinery and equipment, devoted a relatively small share of their new investment (12.9 percent) to improving or expanding their plant facilities.

### Capital Investment Is an Indicator of Growth

The stock of capital, or the capital inventory, indicates the current mix of labor and capital. Industries with a high ratio of capital per worker usually must pay a large share of their revenue to capital, and a relatively small share to labor (salaries and wages).

We can get an indication of whether the stock of capital is growing by looking at new investment—that is, the new plant and equipment purchased to add to the capital stock, or to replace old, worn-out capital that must be replaced. Gross investment is measured by the amount of capital expenditures during a particular year. Depreciation is the amount of capital that wears out or becomes unusable, through physical deterioration or obsolescence. Gross investment must be greater than depreciation in order for the capital stock to grow. If gross investment is less than depreciation, the capital stock will decline. The difference between gross investment and depreciation is net investment.

Investment capital is drawn to activities (industries) that promise high returns so they can expand their capacity and output. Activities with less promising prospects will have difficulty attracting new capital. Thus, industries with strong growth prospects will tend to attract large net investment, while those with less promising prospects will have lower net investment.

Table 1

#### Shares of capital expenditures by asset type and industry

*The largest share of value-added industry capital investment is in special industry machinery*

Industry	Industrial buildings	Special industry machinery	General industry equipment	Computing equipment	Trucks, buses, trailers	Principal other asset
	Percent					
Major value-added industries	19.8	28.5	10.2	10.9	8.3	4.0 <sup>1</sup>
Food and tobacco	23.1	33.9	5.4	10.3	7.7	5.7 <sup>2</sup>
Lumber and wood products	14.9	16.0	*	*	20.1	13.8 <sup>3</sup>
Furniture and fixtures	31.1	13.4	*	24.8	8.8	10.5 <sup>4</sup>
Paper and allied products	12.9	23.1	22.1	12.0	*	10.4 <sup>5</sup>
Leather products	26.8	20.4	13.4	27.5	2.1	2.1 <sup>4,5</sup>
Other manufacturing	22.6	6.0	7.5	21.8	*	13.1 <sup>4</sup>

\*No appreciable new investment. <sup>1</sup>Fabricated metal equipment. <sup>2</sup>Photocopy equipment. <sup>3</sup>Other structures.

<sup>4</sup>Metal working machines. <sup>5</sup>Electric transmissions and industry apparatus.

Source: Bureau of Economic Analysis.

### Net Investment Indicates Moderate Growth

Net investment measures the difference between total investment and the amount needed to replace worn out and obsolete capital. Positive net investment suggests that businesses are expanding capacity (building new plants, adding production lines) or upgrading existing equipment and facilities. ERS estimates show that net investment was positive in each major value-added industry in the mid-1990's. However, the rate at which value-added industries are adding to their stock of plant and equipment through new capital investment indicates that most are expanding capacity more slowly than other manufacturing industries.

Overall, annual net capital investment by value-added manufacturers in the 1990's amounted to 3.2 percent of the value of their stock of plant and equipment. This was identical to the rate for nonvalue-added manufacturers. Food and tobacco manufacturers, with a rate of 4.6 percent, are the only major value-added industry group that expanded productive capital stock at a rate faster than the 3.2-percent average (fig. 2). Lumber and wood products expanded capacity by 2.5 percent, and the furniture industry expanded by 1.9 percent annually. While the dollar value of net investment per worker by paper and allied product manufacturers exceeds that of other value-added industries, the rate of expansion in their production capacity has averaged a modest 1.6 percent annually in the mid-1990's. The slowest rate of investment among value-added industries was for the leather industry (less than 1 percent annually).

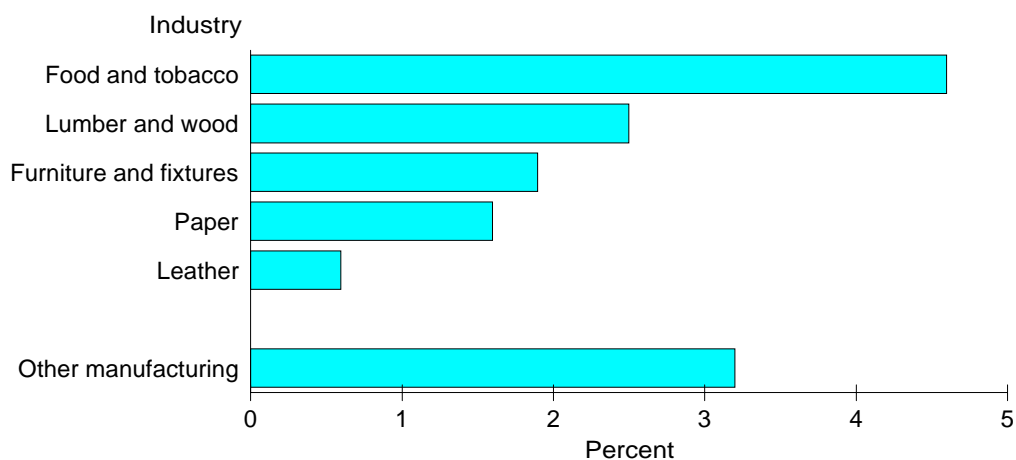
### New Investment Concentrated in South and Midwest

New capital expenditures in value-added manufacturing are concentrated in the East North Central (20.5 percent of expenditures) and South Atlantic (23.1 percent) regions (fig. 3). These two regions together accounted for 43.6 percent of capital expenditures by value-added manufacturers. The Pacific region accounted for 12.5 percent of value-added capital expenditures, and the Mid-Atlantic, East South Central, West South Central, and West North Central regions each accounted for between 9 and 11 percent. Two southern regions, the South Atlantic and East South Central regions, combined accounted for nearly 33 percent of all value-added capital expenditures, but only 21 percent of capital expenditures for other types of manufacturing. This indicates the importance of value-added manufacturing in the South.

Figure 2

#### Net investment as a share of capital inventory: Value-added and other manufacturing industries

*Only the food and tobacco industry is expanding capacity at a rate faster than nonvalue-added industry*



Source: ERS analysis of Bureau of Economic Analysis data.

Value-added industries consume an important share of nonmetro investment capital. The food, tobacco, lumber and wood products, paper, and leather industries accounted together for about 34 percent of capital expenditures by nonmetro manufacturing businesses in 1994. In metro areas, those industries' share of capital expenditures was only 14 percent. New investments in value-added industries are relatively concentrated in nonmetro areas. Nonmetro areas accounted for about 40 percent of capital expenditures made by value-added industries in 1994. About half of nonmetro value-added investment occurred in Southern regions.

The concentration of value-added manufacturing industry capital expenditures in non-metro areas reflects the attraction of capital to other industries in metro areas. The largest shares of new capital expenditures in urban areas go to petroleum, electrical, and transportation equipment industries, while the paper industry has the largest share of capital expenditures in nonmetro areas. [Patrick Canning, 202-694-5341, [pcanning@econ.ag.gov](mailto:pcanning@econ.ag.gov)]

Figure 3

### Regional shares of capital investment: Value-added and other manufacturing industries

*Southern regions receive a relatively large share of value-added industry investment*

